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09/927,578	08/06/2001	Leif Claesson	OCTVP001	6764

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Plantronics, Inc
Legal/Intellectual Property Department
345 Encinal Street
Santa Cruz, CA 95060

EXAMINER	
WOZNIAK, JAMES S	

ART UNIT	PAPER NUMBER
2626	

DATE MAILED: 12/11/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/927,578	CLAESSON ET AL.	
	Examiner	Art Unit	
	James S. Wozniak	2626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 September 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-6 and 8-58* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6 and 8-58* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *14 January 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. In response to the office action from 3/21/2006, the applicant has submitted an amendment, filed 9/21/2006, arguing to traverse the art rejection based on the limitation regarding the adjustment of a gain factor after applying the gain factor to a current sample of a signal component and in response to comparison of the current sample to a threshold level *(Amendment, Pages 2-3)*. Applicant's arguments have been fully considered, however the previous rejection is maintained due to the reasons listed below in the response to arguments.

Response to Arguments

2. Applicant's arguments have been fully considered but they are not persuasive for the following reasons:

With respect to **Claim 1**, the applicant argues that the prior art of record fails to disclose that "the gain factor is adjusted (a) after applying the gain factor to a current sample of the signal component and (b) in response to comparison of the current sample to a threshold level *(Amendment, Pages 2-3)*. The applicant also argues that Rosback *(U.S. Patent: 4,641,361)* does not teach that the *same* gain factor that was applied to the current sample of the signal component is dynamically adjusted.

In response, the examiner points out that while the amplifiers shown in Fig. 3 *(Element 120)* are utilized for pre-amplification as was noted by the applicant *(Amendment, Page 3)*, the gain of each of the pre-amplifiers is effectively controlled at an adder *(Fig. 3, Elements 34,36, and 38)*, which combines a gain control output with a gain clipper limiter output *(Col. 6, Lines 28-36)*. This pre-amplifier gain is adjusted after it is applied to each of the frequency band samples (see Fig. 3) and the adjustment is also in response to the comparison of each frequency band sample to a threshold level *(see threshold section, Fig. 3, as an input to each adder)*.

In addition, the gain control circuit shown in Fig. 3 is part of a larger gain adjustment process, wherein the gain control circuits adjust the gains of a corresponding VCA *(Fig. 1, Elements 16, 18, 20, 22, 24, and 26)*. The gain in each of the VCAs is adjusted after applying a current gain factor to each frequency band sample *(gain adjusted frequency components, Col. 3, Lines 22-24)*. More specifically, the gain-adjusted signals from the VCAs are applied to a gain limiting module *(Fig. 1, Element 30)* to feed back a gain control signal to each gain control circuit as part of a gain adjustment factor *(Col. 3, Lines 22-51)*. The outputs of the gain control circuits are also in response to the comparison of each frequency band sample to a threshold level *(Fig. 3, threshold section)*. The feedback signal and the threshold comparison result are then combined at an adder *(Fig. 3, Elements 24, 36, and 38)* to produce VCA gain control signals. Thus, since Rosback teaches the adjustment of a gain after a gain is applied to produce a feedback gain control signal and in response to a threshold comparison in a threshold section, Claim 1 remains rejected.

The applicant has traversed the rejection of the further independent claims for same reasons as claim 1 *(Amendment, Page 3)*. In response to such arguments, see the above response directed towards claim 1.

The dependent claims are argued as further limiting rejected independent claims *(Amendment, Pages 3-5)*, and thus, also remain rejected for the above noted reasons.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. **Claims 1-2, 4, and 21** are rejected under 35 U.S.C. 103(a) as being unpatentable over Lindemann et al *(U.S. Patent 6,097,824 of WO 98/56210)* in view of Rosback *(U.S. Patent: 4,641,361)*.

With respect to **Claim 1**, Lindemann discloses:

First instructions for separating the original sampled signal into a plurality of signal components each corresponding to one of a plurality of frequency bands *(filtering an audio signal into a plurality of frequency bands, Col. 3, Lines 55-56)*;

Second instructions for independently and dynamically controlling a dynamic range associated with each one of the plurality of signal components *(dynamic range compression gain calculation and application, Col. 5, Lines 36-46)*;

Third instructions for modifying at least one signal level associated with the plurality of signal components *(multiplying a band by a respective gain, Col. 5, Lines 45-46)*; and

Fourth instructions for combining the signal components into a processed sampled signal *(summing scaled bands to generate an output signal, Col. 5, Lines 46-47)*.

Lindemann further teaches a digital signal processor that would inherently contain some type of memory medium for storing the above processing steps relating to dynamic range control *(Fig. 12, Element, 1206)*.

Lindemann does not teach a means for gain adjustment in dynamic range modification wherein the gain is adjusted after applying the gain factor and in response to the comparison of a current sample to a threshold level, however Rosback teaches a means for adjusting a dynamic range (for example, compression) by changing a gain (gain control) after applying the gain to a plurality of frequency band audio signals at an amplifier and comparing the audio signals from the plurality of frequency bands to a threshold *(Fig. 3, Elements 22, 24, 26, and 120; Col. 4, Line 66- Col. 5, Line 14; Col. 2, Lines 59-66)*.

Lindemann and Rosback are analogous art because they are from a similar field of endeavor in dynamic range control systems. Thus, it would have been obvious to a person of ordinary skill in the art, at the time of invention, to modify the teachings of Lindemann with the gain control step taught by Rosback in order to implement automatic gain control in which multiple bands can be simultaneously controlled *(Rosback, Col. 1, Lines 47-50)*.

With respect to **Claims 2 and 21**, Lindemann further teaches filtering an audio signal into a plurality of overlapping frequency bands *(Col. 5, Lines 32-33)*, Rosback further discloses

an implementation wherein an input audio signal is divided into 3 frequency bands *(Col. 2, Lines 25-38)*.

With respect to **Claim 4**, Rosback teaches applying a gain factor to each frequency band sample *(Fig. 1, Elements 22, 24, and 26; Col. 4, Line 66- Col. 5, Line 14)*.

5. **Claims 3, 8-19, 25, 27-28, 31, 41, and 51-53** are rejected under 35 U.S.C. 103(a) as being unpatentable over Lindemann et al in view of Rosback, and further in view of Allen et al *(U.S. Patent: 5,524,148)*.

With respect to **Claim 3**, Lindemann in view of Rosback teaches the dynamic range audio compressor capable of calculating a dynamic range compression gain for each frequency band, as applied to Claim 1. Lindemann in view of Rosback does not specifically teach the use of a non-linear gain, however Allen teaches the use of such a non-linear gain *(Col. 3, Lines 53-67)*.

Lindemann, Rosback, and Allen are analogous art because they are from a similar field of endeavor in dynamic range related processing. Thus, it would have been obvious to a person of ordinary skill in the art, at the time of invention, to modify the teachings of Lindemann in view of Rosback with the use of a non-linear gain as taught by Allen in order to boost loud portions of a speech signal by a lesser amount than quiet portions to thus provide more intelligible speech to a listener *(Allen, Col. 3, Lines 36-67)*.

With respect to **Claim 8**, Lindemann in view of Rosback teaches the dynamic range audio compressor capable of calculating a dynamic range compression gain for each frequency

band, as applied to Claim 4. Lindemann in view of Rosback does not teach adjusting a gain factor upward using a release rate and downward using an attack rate, however, Allen discloses:

The gain factor is adjusted upward using a release rate parameter where each sample is below the threshold level, and downward using an attack rate parameter where each sample is above the threshold level *(threshold comparison, Col. 8, Lines 12-27, an attack time for reducing compressor gain, and a release time for increasing compressor gain, Col. 8, Lines 47-57)*.

Lindemann, Rosback, and Allen are analogous art because they are from a similar field of endeavor in dynamic range related processing. Thus, it would have been obvious to a person of ordinary skill in the art, at the time of invention, to modify the teachings of Lindemann in view of Rosback with the use of an attack time for reducing compressor gain and a release time for increasing gain as taught by Allen in order to provide a means for compensating for a reduced dynamic range of hearing and undue growth of loudness that results from the presence of noise (Col. 7, Lines 50-53).

With respect to **Claim 9**, Allen further recites:

The third instructions limit the at least one signal level with reference to a first number of future samples (peak detector that controls attack time to limit the gain, as applied to Claim 8, and peak detector consideration of a future input sample ($y(n)=x(n)$ if $x(n)>y(n-1)$) to determine an attack time, Col. 8, Lines 47-64).

With respect to **Claim 10**, Allen further teaches adjusting a signal gain with reference to future samples *(attack and release times, Col. 8, Line 47- Col. 9, Line 36)* as applied to Claim 9.

With respect to **Claim 11**, although Allen teaches modifying a gain based on future samples as applied to claim 10, Allen does not specifically suggest decreasing gain if a sample

exceeds a threshold. Rosback, however further recites a clipper limiter for reducing the gain of a signal above a specified level *(Col. 9, Lines 20-48)*.

With respect to **Claims 12 and 13**, Allen further discloses:

The third instructions implement an independent negative attack time limiter for application to each of the plurality of signal components from a sampled signal analog-to-digital converter for obtaining a digital audio signal *(Col. 5, Lines 17-18, which is further divided into frequency bands, peak detector that controls an attack time in order to modify and limit gain for each frequency band, Col. 8, Lines 48-56)*.

With respect to **Claims 14 and 15**, Allen further discloses:

Fifth instructions for applying at least one preset gain factor to at least one of the processed sampled signal and the plurality of signal components, wherein the at least one preset gain factor comprises a plurality of preset gain factors, each preset gain factor corresponding to one of the plurality of signal components (applying a predetermined low level gain, GL and predetermined high level gain, GH to subbands with appropriate energy levels, Col. 8, Lines 1-4).

With respect to **Claim 16**, Allen further discloses:

Multiple ones of the plurality of preset gain factors correspond to each of the plurality of signal components *(high level predetermined gain, GH, corresponding to high energy frequency bands, and low level predetermined gain, GL, corresponding to low energy frequency bands, Col. 8, Lines 24-27)*.

With respect to **Claim 17**, Rosback further discloses:

One of the present gain factors is an inverse of a second one of the multiple ones of the plurality of the gain factors for the corresponding one of the plurality of signal components *(inverse amplifier gain, Col. 6, Lines 39-53)*.

With respect to **Claim 18**, Rosback recites applying a gain prior to an audio signal control prior to a gain control step, as applied to claim 1 and applying an inverse gain at an adder after gain adjustment *(Col. 6, Lines 39-53; Fig. 3)*.

With respect to **Claim 19**, Allen recites:

The at least one preset gain factor comprises a first preset gain factor for applying to the processed sampled signal (*high level predetermined gain, GH, corresponding to high energy frequency bands or low level predetermined gain, GL, corresponding to low energy frequency bands applied to a frequency band before modification, Col. 8, Lines 24-27)*.

With respect to **Claim 25**, Allen further recites a means for transmitting a modified speech signal *(Col. 4, Lines 24-35)*.

With respect to **Claims 27-28**, Allen respectively discloses radio and cellular transmission embodiments (Col. 2, Lines 20-33).

With respect to **Claim 31**, Allen discloses a modified speech signal receiver *(Col. 4, Lines 24-35)*.

Claims 41, 52, and 53 contain subject matter similar to Claims 1 and 8, and thus, are rejected for the same reasons.

With respect to **Claim 51**, Allen further discloses a DSP memory for storing speech processing results *(Col. 11, Lines 59-65)*.

6. **Claims 5-6** are rejected under 35 U.S.C. 103(a) as being unpatentable over Lindemann et al in view of Rosback, and further in view of Szczebak et al *(U.S. Patent: 5,473,666)*.

With respect to **Claims 5 and 6**, Lindemann in view of Rosback teaches the dynamic range audio compressor capable of calculating a dynamic range compression gain for signals within each frequency band, as applied to Claim 4. Lindemann in view of Rosback does not specifically teach that a gain factor is adjusted every first number of samples, wherein the first number of samples comprises 64, however Szczebak teaches calculating a gain in an automatic gain control subroutine every 64 samples *(Col. 12, Lines 12-41)*.

Lindemann, Rosback, and Szczebak are analogous art because they are from a similar field of endeavor in audio signal processing. Thus, it would have been obvious to a person of ordinary skill in the art, at the time of invention, to modify the teachings of Lindemann in view of Rosback with the calculation of a gain every 64 samples as taught by Szczebak in order to prevent abrupt changes in a digitized voice signal amplitude *(Szczebak, Col. 35, Lines 12-41)*.

7. **Claim 20** is rejected under 35 U.S.C. 103(a) as being unpatentable over Lindemann et al in view of Rosback, and further in view of Kates (U.S. Patent: 4,243,840).

With respect to **Claim 20**, Lindemann in view of Rosback teaches the dynamic range audio compressor capable of calculating a dynamic range compression gain for signals within each frequency band, as applied to Claim 4. Lindemann in view of Rosback does not specifically teach a two way crossover for separating an audio signal into a plurality of signal components, however Kates teaches the use of a specific number of crossovers based on a desired number of divided frequency bands *(Col. 1, Lines 30-45)*.

Lindemann, Rosback, and Kates are analogous art because they are from a similar field of endeavor in audio signal processing. Thus, it would have been obvious to a person of ordinary skill in the art, at the time of invention, to modify the teachings of Lindemann in view of Rosback with the specific number of crossovers based on a desired number of frequency bands as taught by Kates in order to provide a well-known band division means that is easily implemented *(Kates, Col. 1, Line 67- Col. 2, Line 6)*.

Thus, it is within the scope of the cited prior art that any number of crossover processing elements, such as is recited in claim 20 could be implemented in a dynamic range modification system based on the desired corresponding number of frequency bands.

8. **Claims 22-24 and 54-57** are rejected under 35 U.S.C. 103(a) as being unpatentable over Lindemann et al in view of Rosback, further in view of Laurence (U.S. Patent: 4,517,415) and yet further in view of Kates (U.S. Patent: 4,243,840).

With respect to Claims **22-24**, Lindemann in view of Rosback teaches the dynamic range modification means as applied to claim 13. Rosback further teaches a specific number of AGC blocks related to a number of divided bands (Fig. 1, Elements 22, 24, and 26) and the use of a gain inverse as applied to claim 17. Lindemann in view of Rosback does not specifically suggest a specific number of NATLs corresponding to a number of frequency bands, however Laurence teaches such a number of NATLs (Col. 2, Lines 23-47).

Lindemann, Rosback, and Laurence are analogous art because they are from a similar field of endeavor in audio signal processing. Thus, it would have been obvious to a person of ordinary skill in the art, at the time of invention, to modify the teachings of Lindemann in view

of Rosback with the specific number of NATLs corresponding to a number of frequency bands as taught by Laurence in order to provide a means for separately adjusting signal levels in different frequency bands *(Laurence, Col. 2, Lines 23-47)*.

Although Lindemann teaches frequency band division as applied to claim 1, Lindemann in view of Rosback, and further in view of Laurence does not specifically suggest the use of a specific number of crossovers based on a desired number of divided frequency bands, however Kates teaches the use of such crossover filter networks *(Col. 1, Lines 30-45)*.

Lindemann, Rosback, Laurence, and Kates are analogous art because they are from a similar field of endeavor in audio signal processing. Thus, it would have been obvious to a person of ordinary skill in the art, at the time of invention, to modify the teachings of Lindemann in view of Rosback and further in view of Laurence with the specific number of crossovers based on a desired number of frequency bands as taught by Kates in order to provide a well-known band division means that is easily implemented *(Kates, Col. 1, Line 67- Col. 2, Line 6)*.

Thus, it is within the scope of the cited prior art that any number of processing elements, such as those cited in claims 22-24 could be implemented in a dynamic range modification system based on the desired corresponding number of frequency bands.

Claims 54-57 contain subject matter similar to Claims 22-24, and thus, are rejected for the same reasons.

9. **Claims 25-40** are rejected under 35 U.S.C. 103(a) as being unpatentable over Lindemann et al in view of Rosback, and further in view of the applicants' admitted prior art *(see OA from 3/21/2006, paragraph 2)*.

With respect to **Claim 25**, Lindemann and Rosback teaches the dynamic range audio compressor as applied to Claim 1. Lindemann and Rosback do not specifically suggest device and method use with a digital audio transmission system, however, since Lindemann discloses the modification of digital audio data and it is the applicant's admitted prior art that it is well known in the art to transmit digital audio from a server in an application such as streaming audio for Internet radio, it would have been obvious to one of ordinary skill in the art, at the time of invention, to implement the audio processing method taught by Lindemann in a well-known application of digital audio usage in a digital audio transmission system to improve audio signal quality before transmission.

With respect to **Claims 26-30**, Lindemann in view of Rosback teaches the dynamic range audio compressor as applied to Claim 1. Lindemann in view of Rosback does not specifically suggest device and method use with a digital audio transmission system specifically featuring: a server platform in a WAN, a digital radio transmission platform, a cellular communication transmission platform, a cable television transmission platform, or a satellite television transmission platform, however, since Lindemann discloses the modification of digital audio data and it is the applicants' admitted prior art that the aforementioned platforms are well known platforms for the transmission of digital audio data, it would have been obvious to one of ordinary skill in the art, at the time of invention, to implement the audio processing method taught by Lindemann in view of Rosback in the aforementioned and well-known applications of digital audio transmission to improve audio signal quality before transmission.

With respect to **Claim 31**, Lindemann in view of Rosback teaches the dynamic range audio compressor as applied to Claim 1. Lindemann in view of Rosback does not specifically

suggest device and method use with a digital audio receiving system, however, since Lindemann discloses the modification of digital audio data and it is the applicants' admitted prior art that it is well known in the art to receive digital audio from a server, in an application such as streaming audio for Internet radio using a computer, it would have been obvious to one of ordinary skill in the art, at the time of invention, to implement the audio processing method taught by Lindemann in view of Rosback in a well-known application of digital audio usage in a digital audio receiving system to improve audio signal quality upon reception.

With respect to **Claims 32-36**, Lindemann in view of Rosback teaches the dynamic range audio compressor as applied to Claim 1. Lindemann in view of Rosback does not specifically suggest device and method use with a digital audio receiving system specifically featuring: a client platform in a WAN, a digital radio receiver, a portable cellular communication device, a cable television decoder, or a satellite television decoder, however, since Lindemann discloses the modification of digital audio data and it is the applicants' admitted prior art that the aforementioned devices are well known devices for receiving digital audio data, it would have been obvious to one of ordinary skill in the art, at the time of invention, to implement the audio processing method taught by Lindemann in view of Rosback in the aforementioned and well-known devices for digital audio reception to improve audio signal quality upon reception.

With respect to **Claims 37-40**, Lindemann in view of Rosback teaches the dynamic range audio compressor as applied to Claim 1. Lindemann in view of Rosback does not specifically suggest device and method use with portable digital audio devices such as CD and MP3 players; however, since Lindemann discloses the modification of digital audio data and it is the applicants' admitted prior art that portable audio devices such as MP3 or CD players are well-

known devices utilizing digital audio data, it would have been obvious to one of ordinary skill in the art, at the time of invention, to implement the audio processing method taught by Lindemann in view of Rosback in a well-known application of digital audio usage in a portable audio device such as an MP3 or CD player to improve audio signal quality.

10. **Claims 42-50** are rejected under 35 U.S.C. 103(a) as being unpatentable over Lindemann et al in view of Rosback, further in view of Allen et al and yet further in view of the applicants' admitted prior art *(see OA from 3/21/2006, paragraph 2)*.

Claim 42 contains subject matter similar to Claims 26 and 32, and thus is rejected for the same reasons.

Claim 43 contains subject matter similar to Claim 26, and thus is rejected for the same reasons.

Also, as noted above with respect to Claim 26, it is the applicants' admitted prior art that it would have been obvious to modify an audio signal at a server, prior to transmission, in order to provide a high quality audio signal to a receiving device (with limited processing means).

Claim 44 contains subject matter similar to Claim 32, and thus is rejected for the same reasons.

Also, as noted above with respect to Claim 32, it is the applicants' admitted prior art that it would have been obvious to modify an audio signal at a receiving device, upon reception, in order to provide a high quality audio signal to a listener (when a server features limited processing means).

With respect to **Claims 45 and 46**, Lindemann in view of Rosback and further in view of Allen teaches the dynamic range audio compressor as applied to Claim 41. Lindemann in view of Rosback and further in view of Allen does not specifically suggest encoding the compressed audio signal in an MP3 format, however, it is the applicants' admitted prior art that it is well known in the art to encode an audio signal into a compressed audio format such as MP3, in order to conserve bandwidth, in a communication medium such as the Internet, and enable quicker access to the files due to decreased file size.

Claims 47-50 contain subject matter similar to Claims 26, 28, 32, 34, 39, 40, and 46, and thus, are rejected for the same reasons.

11. **Claim 58 is** rejected under 35 U.S.C. 103(a) as being unpatentable over Lindemann in view of Rosback, and further in view of Takeo et al (U.S. Patent: 6,014,474).

With respect to **Claim 58** Lindemann in view of Rosback, teach the ability to divide a signal into a plurality of frequency bands as applied to Claim 1. Lindemann in view of Rosback do not suggest a means of obtaining frequency bands by using a plurality of cascaded low pass filters, however Takeo teaches such a well-known means *(Col. 81, Line 66- Col. 82, Line 19)*.

Lindemann, Rosback, and Takeo are analogous art because they are from a similar field of endeavor in frequency-related signal processing. Thus, it would have been obvious to a person of ordinary skill in the art, at the time of invention, to modify the teachings of Lindemann in view of Rosback with the use of cascaded low pass filters as taught by Takeo to provide a readily available and well known means for dividing an input signal into frequency bands at maximum frequency boundaries using a series of low pass filters *(Takeo, Col. 82, Lines 14-19)*.

Conclusion

12. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

Kates *(U.S. Patent: 4,852,175)*- discloses a multi-band gain control system.

Walden *(U.S. Patent: 5,130,665)*- teaches gain adjustment of an amplified audio signal.

Blamey et al *(U.S. Patent: 6,731,767)*- teaches a system for controlling gain after the application of the gain and as a result of a threshold comparison *(see Figs. 4A and 4B)*.

Hou *(U.S. Patent: 6,873,709)*- teaches a system for gain control based on signal levels for individual frequency bands.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to James S. Wozniak whose telephone number is (571) 272-7632. The examiner can normally be reached on M-Th, 7:30-5:00, F, 7:30-4, Off Alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Hudspeth can be reached at (571) 272-7843. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

James S. Wozniak
10/24/2006

DAVID HUDSPETH
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600